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67,200-447; TSMC 00-0890
Serial Number 09/975,855

REMARKS

Favorable reconsideration of this application in light of the above amendments and the following remarks is respectfully requested.

Claims 1-17 are pending in this application. No claims have been allowed.

Drawings

The Examiner has objected to applicant's drawings insofar as they do not include reference numeral 18 as described within applicant's specification at page 14. In response, applicant has amended Figure 3 of drawing sheet 1 of 2 accordingly, to include reference numeral 18. Revised drawing sheet 1 of 2 is appended.

Specification

The Examiner has objected to applicant's disclosure due to informalities in page 37. In response, applicant has amended paragraph 37 accordingly.

Claim Objections

The Examiner has objected to claims 2 and 12 incident to an informality of "photoresist," which should be "resist." In response, applicant has amended claims 2 and 12 accordingly.

Claim Rejections - 35 U.S.C. § 112

The Examiner has rejected claim 10 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In response, applicant has amended 10 accordingly.

Claim Rejections - 35 U.S.C. § 103

The Examiner has rejected claims 1-4, 6, 9-13 and 15 under 35 U.S.C. § 103(a) as being unpatentable over Kanata (U.S. Patent No. 5,667,923) in view of Hirayanagi (U.S. Patent No. 6,180,289).

Kanata (abstract and cover figure) teaches a charged particle beam exposure method that divides exposure patterns into small regions.

Hirayanagi (abstract and cover figure) teaches a projection microlithography mask and mask substrate separate therefrom.

Within the paragraph bridging pages 3-4 of the office action mailed 10 October 2003, the Examiner reads Kanata onto applicant's foregoing claims. At page 4, last paragraph, of the office action mailed 10 October 2003, the Examiner further concludes that Kanata teaches most elements in applicant's foregoing claims to applicant's invention.

At page 5, first paragraph of the office action mailed 10 October 2003, the Examiner acknowledges that Kanata does not teach a charged particle beam method employing a series of adjacent fractured pattern elements within a contiguous latent pattern, where an adjacent pair of pattern elements is separated by a gap. Rather, at page 5, second paragraph of the office action mailed 10 October 2003 the Examiner cites Hirayanagi as teaching that feature of applicant's invention. In particular, the Examiner cites that a gap is formed by Hirayanagi's retention member as disclosed at Fig. 1c and col. 2, lines 5-10.

Within the paragraph bridging pages 5-6 the Examiner first notes that the foregoing references are analogous art since they are drawn to charged particle beam methods. The Examiner asserts that it would have been obvious to use the mask of Hirayanagi in the method of Kanata as the mask of Hirayanagi can be employed without direct writing which allows for relatively high wafer throughput and decreased costs. The Examiner also predicates reasonable expectation of success in using the mask of Hirayanagi, as Kanata teaches that the charged particle beam method is performed with a mask.

In response, applicant takes issue with the Examiner's characterization that a gap formed by Hirayanagi's retention member is a gap that separates a pair of fractured pattern elements within a series of adjacent fractured pattern elements in accord with applicant's invention as claimed within claim 1, clause 3 and claim 11, clause 4. Applicant understands that the retention member 12 (Fig. 1(c)) to apparently be a backing plate upon which is mounted a pair of mask reticles 11a and 11b. Such a backing plate clearly does not provide a gap between a pair of fractured pattern elements even if fractured pattern elements were present, since such a backing plate is in a plane beneath the pair of mask reticles 11a and 11b.

Thus, since each and every limitation within applicant's invention as disclosed and claimed within claim 1 and claim 11 is not taught within Kanata and Hirayanagi as combined by the Examiner, in particular with respect to a gap separating at least one adjacent pair of a series of adjacent fractured pattern elements, applicant asserts that claim 1 and claim 11 may not properly be rejected under 35 U.S.C. § 103(a) as being unpatentable over Kanata in view of Hirayanagi. Since all remaining claims within the foregoing rejection are dependent upon claim 1 or claim 11 and carry all of the limitations of claim 1 or claim 11, applicant

67,200-447; TSMC 00-0890
Serial Number 09/975,855

additionally asserts that those remaining claims may also not properly be rejected under 35 U.S.C. § 103(a) as being unpatentable over Kanata in view of Hirayanagi.

The Examiner has rejected claims 5 and 14 under 35 U.S.C. § 103(a) as being unpatentable over Kanata in view of Hirayanagi and further in view of Ausschnitt (U.S. Patent No. 5,629,772).

Ausschnitt is cited as teaching a positive photoresist.

Applicant predicates patentability of claims 5 and 14 upon their dependence upon claims 1 and 11.

Allowable Subject Matter

The Examiner has objected to claims 7-8 and 16-17 as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant appreciates the indication of allowable subject matter within claims 7-8 and 16-17. However, applicant believes that allowable subject matter already exists within claims 1 and 11.

Other Considerations

The Examiner has cited no additional prior art of record not employed in rejecting applicant's claims to applicant's invention. No fee is due as a result of this Amendment and Response.

67,200-447; TSMC 00-0890
Serial Number 09/975,855

SUMMARY

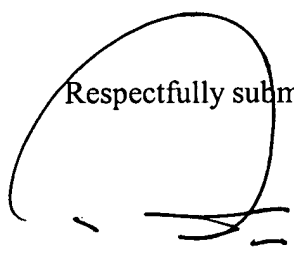
Applicant's invention as disclosed and claimed within claim 1 and claim 11 is directed towards a method for forming a patterned resist layer and a method for forming a photomask. Each of the methods employs a charged particle beam exposed resist layer having a contiguous latent pattern comprising a series of adjacent fractured pattern elements, at least one pair of which is separated by a gap. The same is absent within the prior art of record.

CONCLUSION

On the basis of the above amendments and remarks, reconsideration of this application, and its early allowance, are respectfully requested.

Any inquiries relating to this or earlier communications pertaining to this application may be directed to the undersigned attorney at 248-540-4040.

Respectfully submitted,



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